1025 species, 586 described as new. These forms are illustrated by ten plates containing 350 coloured figures and by a number of structural text-figures. Notwithstanding this there are grounds for thinking that only the fringe of the Central American microlepidopterous fauna has been touched. Dr. Godman's collectors had to obtain insects of all orders, and could not devote attention to micro-moths to the exclusion of other groups. Thus the most able collectors could scarcely obtain samples of more than a portion of the Microlepidoptera. These insects cannot be packed and preserved so easily as those of many other groups. They require special treatment of a very delicate kind, which it is not easy to give when collecting all orders, as the writer of this review can testify from his own experience in the forests of certain tropical islands.

The extended aim of the work has necessitated a vast amount of bibliographical research. In connection with questions of nomenclature a protest is entered against the practice, now becoming prevalent, of arbitrarily "selecting and maintaining generic names by summary fixation of types without due regard for previous work done by critical authors." Lord Walsingham contends that however necessary in the interests of priority and uniformity arbitrary rules may be for the present and future, they should not be made retrospective. When the limits of genera have been modified by the careful and expert work of earlier writers, such modification must be taken into account; otherwise a death-blow may be struck at the whole system of true priority.

The names of the three specialists responsible for it are a guarantee of the high quality of this treatise, and its appearance as the last systematic volume of the Biologia forms a fitting close to the monumental work of Dr. Godman and the late Mr. Salvin. HUGH SCOTT.

BOTANY, NATURE STUDY, AND GARDENING.

(1) *The Study of Plants: an Introduction to Botany and Plant Ecology.* By Dr. T. W. Woodhead. Pp. 440. (Oxford: At the Clarendon Press, 1915.) Price 5*s.* 6*d.*

(2) *A School Flora for the Use of Elementary Botanical Classes.* By Dr. W. M. Watts. New edition. Pp. viii+208. (London: Longmans, Green and Co., 1915.) Price 3*s.* 6*d.*

(3) *The Surrey Hills.* By F. E. Green. Pp. x+252. (London: Chatto and Windus, 1915.) Price 7*s.* 6*d.* net.

(4) *In Pastures Green.* By P. McArthur. Pp. xi+364. (London and Toronto: J. M. Dent and Sons Ltd., 1915.) Price 5*s.* net.

(5) *How to Lay Out Suburban Home Grounds.* By H. J. Kellaway. Second edition. Pp. x+134. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1915.) Price 8*s.* 6*d.* net.

(1) THE course of work in elementary botany set forth in this book is such as to fulfil admirably the author's main object: the establishment of the fundamental principles of plant physiology; while the prominence given to plant ecology and the admirable manner in which this aspect of the subject is treated are just what one would expect from a writer who has contributed so materially to the progress of this branch of botany. Form and structure, however, are by no means neglected in Dr. Woodhead's well-planned course, but merely made subservient to physiology and ecology; morphological facts are treated in relation to function and habitat, while the necessary morphological data are introduced where required in the discussion of the various types of vegetation. The book is liberally illustrated, and the figures are mostly new and all extremely good, a large proportion being photographs. It would be very difficult to find a better introduction to the study of plant ecology than is given in the section, extending to about ninety pages, with fifty illustrations of which many are very fine photographs of vegetation, devoted to this subject. We could wish that climatic factors had been somewhat more fully dealt with, and it seems rather inadvisable at present to introduce any terms for vegetation units beyond the non-committal "plant community" in a book intended for young students. It is safe to predict that Dr. Woodhead's book will be widely adopted for class use, and it is to be hoped that it will come into the hands of every teacher of botany.

(2) Watts's "School Flora" is too well known and extensively used by teachers and students of elementary botany to require further commendation for its good points—its cheapness and handiness, and the usefulness of the keys to the families, genera, and species of vascular plants. This new edition is stated in the preface to have been "thoroughly revised," but the chief features of the revision appear to consist in the addition of a key for the identification of trees and shrubs from their leaves, and in the extension of the list of schools near which the rarer plants grow—this fact being noted in connection with the description of each plant concerned. The first feature mentioned is useful, but the second strikes us as worse than useless; it appears somewhat foolish

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and dangerous to indicate in a book of this sort the habitats of plants in the increasing rarity and threatened extermination of which teachers and students of elementary botany have undoubtedly assisted. At this date, too, it is ridiculous to retain the old plan of inserting the Coniferæ in the Dicotyledons, calling the vascular cryptogams "Acotyledons," and so forth.

(3) This pleasant book on the Surrey hills is rather of literary than scientific interest, but nevertheless it ought to be in the hands of all who visit this attractive region with the primary object of studying its flora and fauna. Such readers will find much of the book of real service as a guide to the topography, even though it is only casually interpolated in the author's entertaining chat concerning past and present dwellers in what is, unfortunately, rapidly becoming suburb rather than countryside.

(4) This book also, though dealing with quite another aspect of country life, is scarcely of scientific interest; in fact, as the author tells us, the reader who consults these pages for scientific information does so at his peril, though he will certainly find much of interest concerning various aspects of farming. The book is cast in the form of a diary, dealing with all kinds of farm work at different seasons of the year. Though written in a racy and humorous style, the book contains a vast amount of information which will prove of interest and value to a wide circle of readers, but more particularly so to those who, like the author himself, are looking forward to the inevitable land-hunger which will be one of the results of the present war, and will surely force a solution of the land problem. "Back to the land" is the author's text, and his experiences, as here related, will undoubtedly be helpful to others who are thinking of going back to the land.

(5) The purpose of this book is indicated in the title; and so practical and thorough is the author's treatment of his subject that it cannot fail to be of value to all who are interested in the planning of suburban gardens and home surroundings in general. Even those who cannot begin at the beginning, but must make the best of what the builder has done, will find here many useful hints regarding the laying out and planting of lawns and gardens, the kinds of trees, shrubs, and herbaceous plants to choose, etc. Some striking photographs are given to illustrate the manner in which well-built and pleasantly situated houses of moderate size may be rendered more attractive, and even ugly and ill-placed houses beautified, by following out the schemes set forth in detail by the author. F. C.

OUR BOOKSHELF.

Elementary Practical Metallurgy for Technical Students and Others. By J. H. Stansbie. Pp. viii+151 (London: J. and A. Churchill, 1915.) Price 3*s*. 6*d*. net.

LABORATORY courses for metallurgical students have often in practice consisted merely of instruction in assaying. The needs of evening students attending technical classes are not, however, met by such courses, and a complete change from the old methods is observable in most schools. Mr. Stansbie has found at the Birmingham Municipal Technical School that students desire only so much practical instruction as will give them an insight into the properties of the metals in which they are interested. Several special courses were gradually developed to meet the requirements of the various metal trades, and this book is put together from the laboratory notes of these courses. It offers sufficient scope for practical work in general metallurgy extending over the evenings of two years and leading up to the higher stages.

There is little in this admirable little book to which exception can be taken. It is a good piece of work, and will be very useful to teachers and students of evening technical classes, for whom it is primarily intended. Experiments are described on fuel, refractory materials, slags, fluxes, the formation and reduction of oxides and sulphides, and on the common metals. The last chapter describes the assay of gold and silver. The section on mechanical testing is particularly well done. If the student has previously passed through a course in elementary chemistry, he will find no difficulty in understanding the experimental work which he is asked to do.

An Introduction to Ethics for Training Colleges. By G. A. Johnston. Pp. x+254. (London: Macmillan and Co., Ltd., 1915.) Price 3*s*. net.

MORALITY of some sort, from the most ideal to the mere "reach-me-down" variety, has been indirectly taught in schools ever since schools became an institution. But, like the morality which is taught by all experience, to the primitive as well as to the civilised member of society, such instruction is founded in group-morality, which varies with climate, epoch, and other phases of environment. The various systems of theological morality are not to be excluded from the genus of group. When an attempt is made towards absolutism, whether by the *a priori* or the comparative method, we have ethical "science," the "moral philosophy" of European mental tradition. Ethics is actually a subject in French schools, a fact probably due to the logical bias of the French intellect. There is also a tendency now towards a moral *entente* between the different interests and racial features of the world.

Mr. G. A. Johnston's very complete little volume, designed for those who will teach in elementary schools, aims very sensibly at a psychological answer to the instructional problem as it is presented to-day. Every moral influence

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